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Indian Standard

ELECTROTECHNICAL VOCABULARY

PART 73 PHYSICS AND CHEMISTRY
Section 3 Concepts Related to Quantities and Units

UDC 53·081 : 621·3·01 : 001·4

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Basic Electrotechnical Standards Sectional Committee, ETD 01

NATIONAL FOREWORD

This Indian Standard (Part 73/Sec 3) which is identical with IEC Pub 50 (111-03) (1977) 'International electrotechnical vocabulary — Chapter 111 : Physics and chemistry, Section 03 : Concepts related to quantities and units', issued by the International Electrotechnical Commission (IEC), was adopted by the Bureau of Indian Standards on the recommendation of the Basic Electrotechnical Standards Sectional Committee, ETD 01 and approval of the Electrotechnical Division Council.

Only the English text given in the IEC publication has been retained while adopting as Indian Standard, and as such the page numbers given here are not same as in IEC publication.

IS 1885 (Part 73/Sec 3) : 1993
IEC Pub 50 (111-03) (1977)

Indian Standard
ELECTROTECHNICAL VOCABULARY
PART 73 PHYSICS AND CHEMISTRY
Section 3 Concepts Related to Quantities and Units

EXPLANATORY NOTE

The purpose of I.E.V. advance editions is to permit the issue without loss of time of terminology work whose publication would otherwise be delayed and, in particular, work which does not exactly correspond to the general plan of the I.E.V.; for example, incomplete chapters, vocabularies extending beyond the framework of a normal chapter or work relating to rapidly evolving fields. Advace editions may, in certain cases, be incomplete, particularly as regards the Russian text and the terms in the addtional languages, when the appropriate information is not available at the time of printing.

111-03-01

(measurable) **quantity**

An attribute of phenomenon or of a body which is susceptible to qualitative identification and quantitative determination.

111-03-02

(value of a) **quantity**

A quantitative determination of a quantity expressible as the product of a number and a unit of measurement.

Note. — The value of a quantity is independent of the choice of unit.

111-03-03

unit (of measurement)

(The value of) a quantity chosen by convention as a reference for measuring quantities of the same kind.

111-03-04

numerical value (of a quantity)

measure (of a quantity)

The ratio of the value of the quantity to the chosen unit of measurement.

111-03-05

quantity equation

An equation in which letter symbols represent physical quantities.

111-03-06

numerical value equation

measure equation

An equation in which letter symbols represent numbers, the numerical values corresponding to the chosen units.

111-03-07

unit equation

An equation in which letter symbols represent units.

111-03-08

base quantity

One of the quantities of a set, by convention considered as dimensionally independent of the other quantities of that set.

111-03-09

derived quantity

One of the quantities of a set, defined as a function of the base quantities of the set by a quantity equation.

111-03-10

base unit

The unit of measurement of a base quantity.

111-03-11

derived unit

The unit of measurement of a derived quantity.

111-03-12

system of units

A set of base units and derived units for a specified group of quantities.

111-03-13

coherent system (of units)

A system of units such that the numerical value equations and the corresponding quantity equations are the same.

111-03-14

International System of Units (SI)

A system of units comprising :

— the SI units, which form a coherent set,

— the SI prefixes used for the formation of decimal multiples and submultiples of SI units.

111-03-15

SI base unit

One of the units on which SI is based. (*see* Appendix).

111-03-16

SI derived unit

One of the derived units in SI. (*see* Appendix).

111-03-17
SI supplementary unit

An SI unit which may be treated either as a base unit or as a derived unit. (*see* Appendix).

111-03-18
SI unit

Any of the base, supplementary or derived units in the SI.

APPENDIX

INTERNATIONAL SYSTEM OF UNITS (SI)

Base units

- metre : unit of length (USA : meter)
- kilogram : unit of mass
- second : unit of time
- ampere : unit of electric current
- kelvin : unit of thermodynamic temperature
- mole : unit of amount of substance
- candela : unit of luminous intensity

Derived units with special names

- hertz : unit of frequency
- newton : unit of force
- pascal : unit of pressure
- joule : unit of work, energy, heat
- watt : unit of power
- coulomb : unit of electric charge, electric flux
- volt : unit of voltage, electromotive force, potential difference
- farad : unit of capacitance
- ohm : unit of resistance, impedance, reactance
- siemens : unit of conductance, admittance, susceptance
- weber : unit of magnetic flux
- tesla : unit of magnetic flux density
- henry : unit of inductance, mutual inductance, permeance
- lumen : unit of luminous flux
- lux : unit of illuminance
- becquerel : unit of activity of radionuclide
- gray : unit of absorbed dose

Supplementary units

- radian : unit of plane angle
- steradian : unit of solid angle

SI prefixes (for decimal multiples and submultiples)

Prefix	*Factor*
exa	10^{18}
peta	10^{15}
tera	10^{12}
giga	10^{9}
mega	10^{6}
kilo	10^{3}
hecto	10^{2}
deca, deka	10^{1}
deci	10^{-1}
centi	10^{-2}
milli	10^{-3}
micro	10^{-6}
nano	10^{-9}
pico	10^{-12}
femto	10^{-15}
atto	10^{-18}

Note. — Other units (SI or non-SI) widely used in electrotechnology are given in IEC Publication 27.

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Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :		Telephone
Central :	Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern :	1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	37 84 99, 37 85 61 37 86 26, 37 86 62
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